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Forest Pest Management Report

R-3 82-1

BIOLOGICAL EVALUATION
Hazard Trees and Dwarf Mistletoe
in Six Summer Home Areas

Payson Ranger District,
Tonto National Forest, Arizona

October 1981

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Forest Pest Management
State and Private Forestry
Southwestern Region, USDA, Forest Service
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INTRODUCTION

In response to a request from personnel on the Payson Ranger District, Tonto National Forest, Jerry Beatty, plant pathologist, Forest Pest Management, and a field crew examined six summer home areas for hazard trees and dwarf mistletoe. The purpose of the examination was to identify and rate potential hazard trees and to identify, locate, and quantify dwarf mistletoe-infected areas. The fieldwork was done from July 8 to July 15, 1981.

THE PROBLEM

The six summer home areas--Diamond Point; Ellison Creek; See Canyon; Thompson Draw, block 1; Thompson Draw, block 2; and Washington Park--are located on the Payson Ranger District about 90 miles northeast of Phoenix, Arizona. Some of the homesites have been occupied since the 1950's and as far as is known have never been formally examined for potential hazard trees or insect and disease problems. Southwestern dwarf mistletoe on ponderosa pine was known to occur in four of the areas, but the general condition of the trees was unknown. The examination revealed 237 trees that were rated as possible hazards, one small area of dwarf mistletoe in Ellison Creek, and large areas of heavy dwarf mistletoe infection in See Canyon, Thompson Draw, blocks 1 and 2, and Washington Park.

HAZARD TREES

In order for a tree to be considered a hazard it must have both a mechanical defect that could cause it to fail and a potential target. Targets in recreation areas consist of permanent structures, picnic tables, vehicles, and people. A mechanical defect is anything that weakens the structural integrity of the tree, increasing the probability that it will fail.

Methods

A 100 percent survey examined every occupied lot in each summer home area for potential hazard trees and for the presence of dwarf mistletoe.

The species, d.b.h., location on the lot, lot number, and hazard rating were recorded for all potential hazard trees. The rating system used is composed of two parts; each part can be rated as either low, medium, or high. The first part of the rating is the probability that the tree or a major part of the tree will fail within the next 5 years. This rating takes into account all factors leading to tree failure, among them the amount of decay present, the amount of lean, condition and location of roots and crown, as well as the presence of insects and diseases. The second part of the rating is an estimate of the probability of injury to people or damage to property if the tree should fail. For example: a large, rotten tree with a thin crown leaning over a house would be rated as a high/high, H/H. The same

tree, if located on the edge of the lot away from the house, would probably rate a high/low, H/L, or possibly may not be rated at all. Strictly speaking, a rotten tree that has no target is not a hazard. However, because of the high density of houses, people, and vehicles in a summer home area, any tree that could even remotely be considered to have a potential target was given a rating. In these cases the damage probability rating will always be "low" and the land manager must take this into account when planning corrective actions. After rating, each tree was assigned a number and its approximate location was marked on a sketch map.

Results and Discussion

The number, location, size, and rating of each tree are displayed in appendixes 1 through 6, and figures 1 through 6, as follows:

Diamond Point - 29 trees rated, figure 1, appendix 1.
Ellison Creek - 45 trees rated, figure 2, appendix 2.
See Canyon - 70 trees rated, figure 3, appendix 3.
Thompson Draw, Block 1 - 33 trees rated, figure 4, appendix 4.
Thompson Draw, Block 2 - 43 trees rated, figure 5, appendix 5.
Washington Park - 17 trees rated, figure 6, appendix 6.

A hazard tree rating is not the same as a recommendation for action. The land manager must weigh the rating, his management objectives in a particular area, and any possible restrictions before deciding on any action. If hazard trees are not treated or removed, the risk of failure can only increase with time; also trees can be injured and become hazard trees at any time. For these reasons, any developed recreation area management plan should include a schedule of regular tree inspections by Forest Pest Management pathologists or District personnel trained in the recognition and rating of hazard trees.

Alternatives

1. Do nothing. Trees rated as hazard trees will continue to decline and the probability of failure will increase. Due to natural and man-caused injuries, healthy trees will become hazard trees. The probability of tree failure causing personal injury and/or property damage will increase.

2. Remove or treat hazard trees. This will lessen the possibility of failure and damage to property or people.

3. Remove targets. This alternative would involve closing the summer home area or the particular lot involved.

DWARF MISTLETOE

Biology

Dwarf mistletoes are parasitic higher plants that infect a variety of conifers in the Southwest. They are totally dependent upon their hosts for support, water, and most of their nutrients. Most dwarf mistletoe infections are found in the branches of trees, but occasionally bole infections do occur. Heavy infections often cause the formation of "witches' brooms"--dense masses of clustered branches and foliage--that act as nutrient sinks, drastically reducing the vigor of the infected tree.

Dwarf mistletoes spread by seeds that are explosively ejected from the plants. Infections are started when a seed strikes the needles of a suitable host. The seed has a coating that absorbs moisture, becomes slippery, and allows the seed to slide down to the base of the needle. The seed then germinates and penetrates the thin bark of the small branch. Spread is most rapid and efficient from an infected overstory to the understory. The distance a dwarf mistletoe seed travels is dependent upon the height of the plant in the infected tree, but is usually 20 to 60 feet and can be as far as 100 feet with a following wind. Dwarf mistletoes spread upward in infected trees at a rate of about 4 inches per year.

Dwarf mistletoes are host-specific, obligate parasites with a limited and relatively slow rate of spread; management options in recreation areas for this disease are based upon these facts. Options for control include:

1. Pruning witches' brooms. Pruning large witches' brooms can dramatically increase the vigor and life span of infected trees. This option will not eradicate the infection, but it will help maintain valuable trees.

2. Pruning of infected branches. This option is used when lightly infected trees can be sanitized and have a good chance of not being reinfected. Pruned trees must retain at least a 30 percent live crown.

3. Sanitation and thinning. Heavily infected trees are removed along with excess trees. The success of this option depends on the presence of an adequately stocked understory. On many lots, there may be no choice but to leave infected trees. When a tree is cut, the dwarf mistletoe plants die, so removing or burning the slash created is unnecessary in order to control dwarf mistletoe; however, piling slash near living trees should be avoided as it attracts and provides breeding material for bark beetles, which may attack the adjacent living trees.

4. Underplanting with resistant species. In areas of heavy infection, where removal of infected trees is not feasible, resistant species of trees can be planted. Douglas-fir, white fir, white pine, oaks, and junipers can be planted under infected ponderosa pine with no danger of the planted stock becoming infected. Douglas-fir and white fir should not be planted under infected Douglas-fir.

5. Buffer zones/strips. A buffer zone or strip is an area between infected and uninfected stands where all infected and susceptible hosts of a particular species of dwarf mistletoe have been removed. The purpose of these areas is to limit the spread of dwarf mistletoe into uninfected trees. Buffer strips should be tied into uninfected stands, roads, fuelbreaks, and powerline rights-of-way whenever possible.

Methods

Dwarf mistletoe-infected trees were handled in several different ways:

1. In areas where dwarf mistletoe could be eradicated or the area could effectively be sanitized, each tree was marked for treatment and its d.b.h. and dwarf mistletoe rating were recorded. The trees were marked with paint, a blue mark for trees to be cut and orange for trees to be pruned.

2. In other areas, trees were marked with paint, as above, but only the number of trees in each category was recorded.

3. High value trees that would benefit from broom pruning were marked with orange paint at the base and their d.b.h.'s, locations, and number of prunable brooms recorded.

4. Buffer strips between infected and uninfected areas were marked with flagging and the trees to be cut marked with blue paint.

Trees infected with dwarf mistletoe are rated for degree of infection on a 6-class scale, 0 to 6. A tree with no infection is rated 0, while a heavily infected tree can be rated as high as 6. A description of the rating system is given below.

STEP 1: DIVIDE LIVE CROWN INTO THIRDS.

STEP 2: RATE EACH THIRD SEPARATELY. EACH THIRD SHOULD BE GIVEN A RATING OF EITHER 0, 1, OR 2 AS DESCRIBED BELOW.

(0) No visible infection

(1) Light infection (½ or less of total number of branches in the third infected)

(2) Heavy infection (more than ½ of total number of branches in the third infected)

STEP 3: ADD RATINGS OF THIRDS TO OBTAIN RATING FOR TOTAL TREE.

Results and Discussion

Two species of dwarf mistletoe were identified during the examination: southwestern dwarf mistletoe, Arceuthobium vaginatum subsp. cryptopodum, on ponderosa pine and Douglas-fir dwarf mistletoe, A. douglasii, on Douglas-fir. Most species of dwarf mistletoe are host specific; however, A. douglasii can and occasionally does infect white fir.

During the examination, areas of dwarf mistletoe infection were marked as if for a control project using the various options listed on pages 3 and 4. Dwarf mistletoe-infected areas and possible buffer strips are outlined on maps in figures 2 through 6. The d.b.h., dwarf mistletoe (DM) rating, and actions recommended for individual trees are listed in appendixes 2 through 5.

Diamond Point--No dwarf mistletoe found.

Ellison Creek--Two areas of dwarf mistletoe were found; trees were marked for cutting and pruning to completely sanitize the area (figure 2, appendix 2).

See Canyon--This area is heavily infected with ponderosa pine dwarf mistletoe. There is an uninfected section (marked "clear" in figure 3) in the center, and the west side is also uninfected. Douglas-fir dwarf mistletoe was found east of a line from lots 21, 31, 33, and 34. The prescription for See Canyon is to thin in overstocked areas removing infested trees and to broom prune large, valuable trees. Forty-six trees were marked for broom pruning (orange paint) (figure 3, appendix 3).

Thompson Draw, Block 1--Mistletoe is located west of a line from lot 14 through lots 15, 16, 17, 22, 24, 23, 20, to 26. The prescription for Thompson Draw, block 1, includes sanitizing lots 16 and 17, broom pruning large, valuable trees on lot 25, and cutting a buffer strip, already flagged, from lot 14 north to lot 24 (figure 4, appendix 4).

Thompson Draw, Block 2--Mistletoe is confined to southwest side of summer home area, figure 5. Buffer zone marked starting between lots 70 to 71, south along road to lot 77, west of 76, east to between 78 and 83. Sanitize 60, buffer zone then runs southeast between 81 and 82 out to thinning area. Sanitize 46 and 65, appendix 5.

Washington Park--Dwarf mistletoe west of lots 16 and 17 up to road; east of road by lots 9 to 10, figure 6. The uninfected lots in Washington Park are separated from the infected trees by natural buffer zones; a road on the north and east and a concentration of resistant tree species along the stream drainage. No control is proposed other than to plant and favor resistant species on infested lots.

Alternatives

1. Do nothing. Trees already infected will continue to decline. Mortality caused by dwarf mistletoe, insects, and environmental stresses will increase. The infected areas will increase in size as healthy trees become infected. Some lots with high infection levels will lose practically all their trees.

2. Remove all trees infected with dwarf mistletoe. This alternative is only viable in the Ellison Creek area. The other areas have such a large number of infected trees that cutting all infected trees would leave many lots denuded of trees.

3. Prune infected branches, prune dwarf mistletoe brooms, cut excess trees, and underplant with resistant species. By using a combination of management options as discussed on pages 3 and 4, try to retain as many trees as possible, sanitize some areas, and construct buffer strips to slow down or stop the spread of dwarf mistletoe to uninfected areas. Many trees will be removed under this alternative, but not nearly as many as under alternative 2. Every effort should be made to retain as many trees as possible. Cutting and pruning infected trees would create large amounts of slash; this slash would have to be removed or treated in order to avoid problems with bark beetles.

Recommendations

We recommend alternative 3 for dwarf mistletoe.

APPENDIXES

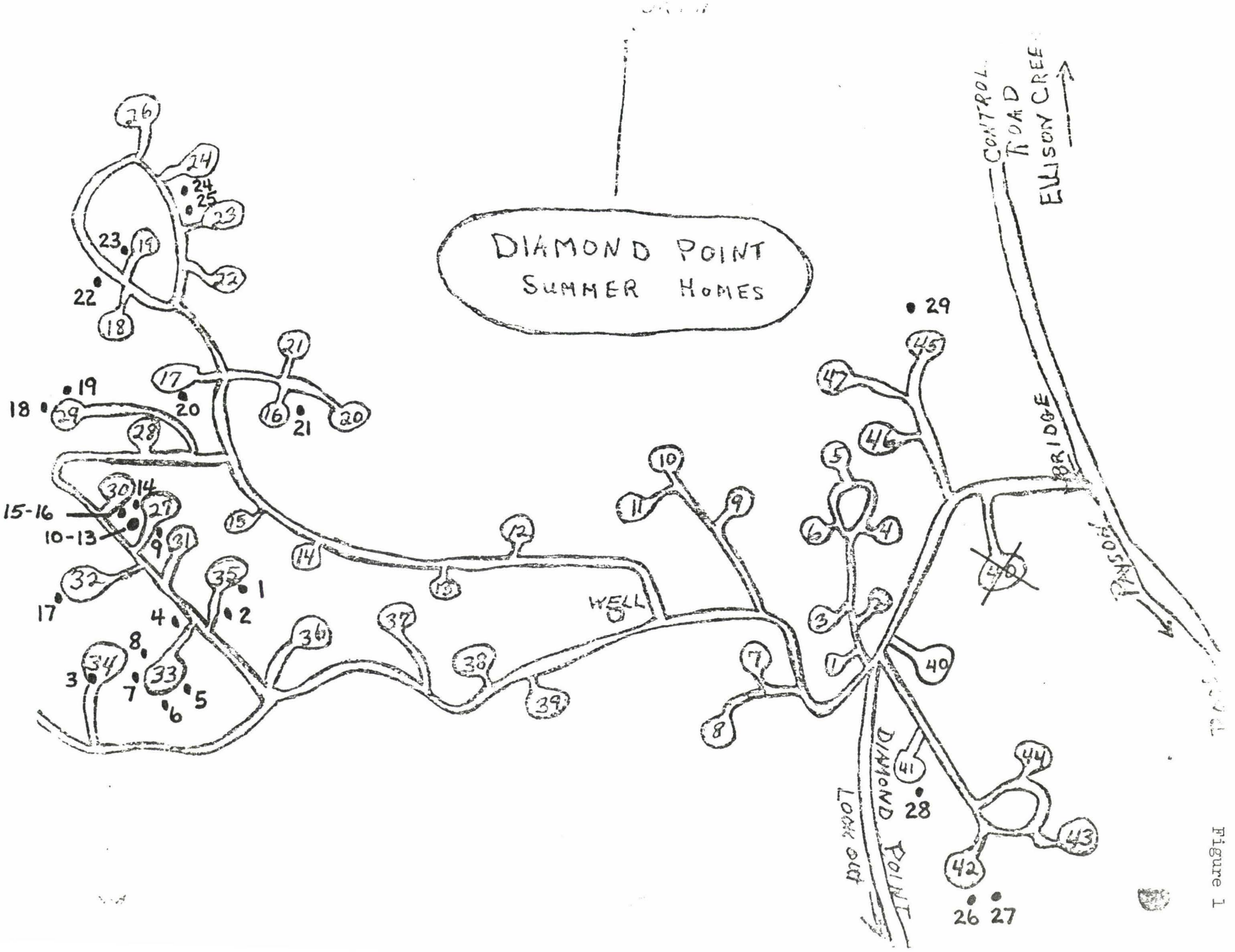

DIAMOND POINT
SUMMER HOMES
CONTROL
ROAD
ELLISON CREEK
BRIDGE
PARSON'S
WELL
DIAMOND POINT
LOOKOUT

Figure 1

DIAMOND POINT

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
1	35	40' E. cabin	PP	15		X		L/L	X	Limb defect
2	35	100' S. cabin	PP	19			X	L/M		Root & butt rot, by driveway
3	34	50' S. cabin	PP	9	X	X		M/H		Heart & butt rot
4	33	W. corner of road and driveway	PP	9		X		L/M	X	Root rot
5	33	30' SE cabin	PP	8			X	M/M	X	
6	33	50' S. cabin	PP	13			X	M/M	X	
7	33	60' SE cabin	PP	6			X	M/M	X	
8	33	60' SE cabin	PP	8			X	M/M	X	
9	27	60' SE cabin	PP	5			X	M/L	X	
10	27	60' SE cabin	PP	5			X	M/L	X	
11	27	60' SE cabin	PP	6			X	M/L	X	
12	27	60' SE cabin	PP	9			X	M/L	X	
13	27	60' SE cabin	PP	4			X	M/L	X	
14	27	10' S. cabin	PP	11	X		X	L/M		Dead top
15	27	30' W. cabin	PP	4			X	M/L	X	
16	27	30' W. cabin	PP	4			X	M/L	X	

DIAMOND POINT

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
17	32	20' W. cabin	PP	15	X		X	L/H	X	New dead
18	29	30' W. cabin	PP	9			X	M/M	X	
19	29	15' NE cabin	PP	10			X	M/H	X	New dead
20	17	30' SW cabin	PP	27	X			M/M	X	Limb defect
21	16	80' N. cabin	PP	7	X			L/M	X	New dead, powerline
22	19	Across road from Lot 19	PP	25	X			L/L	X	Limb defect, powerline
23	19	30' SW cabin	PP	8			X	L/M	X	New dead
24	24	40' S. cabin	PP	4			X	M/M	X	10° lean
25	24	40' S. cabin	PP	4			X	M/M	X	10° lean
26	42	45' S. cabin	PP	7			X	M/L	X	
27	42	15' S. cabin	PP	5			X	M/L	X	
28	41	30' S. cabin	PP	17	X		X	M/H	X	
29	45	120' N. cabin	PP	25			X	L/L	X	In stream

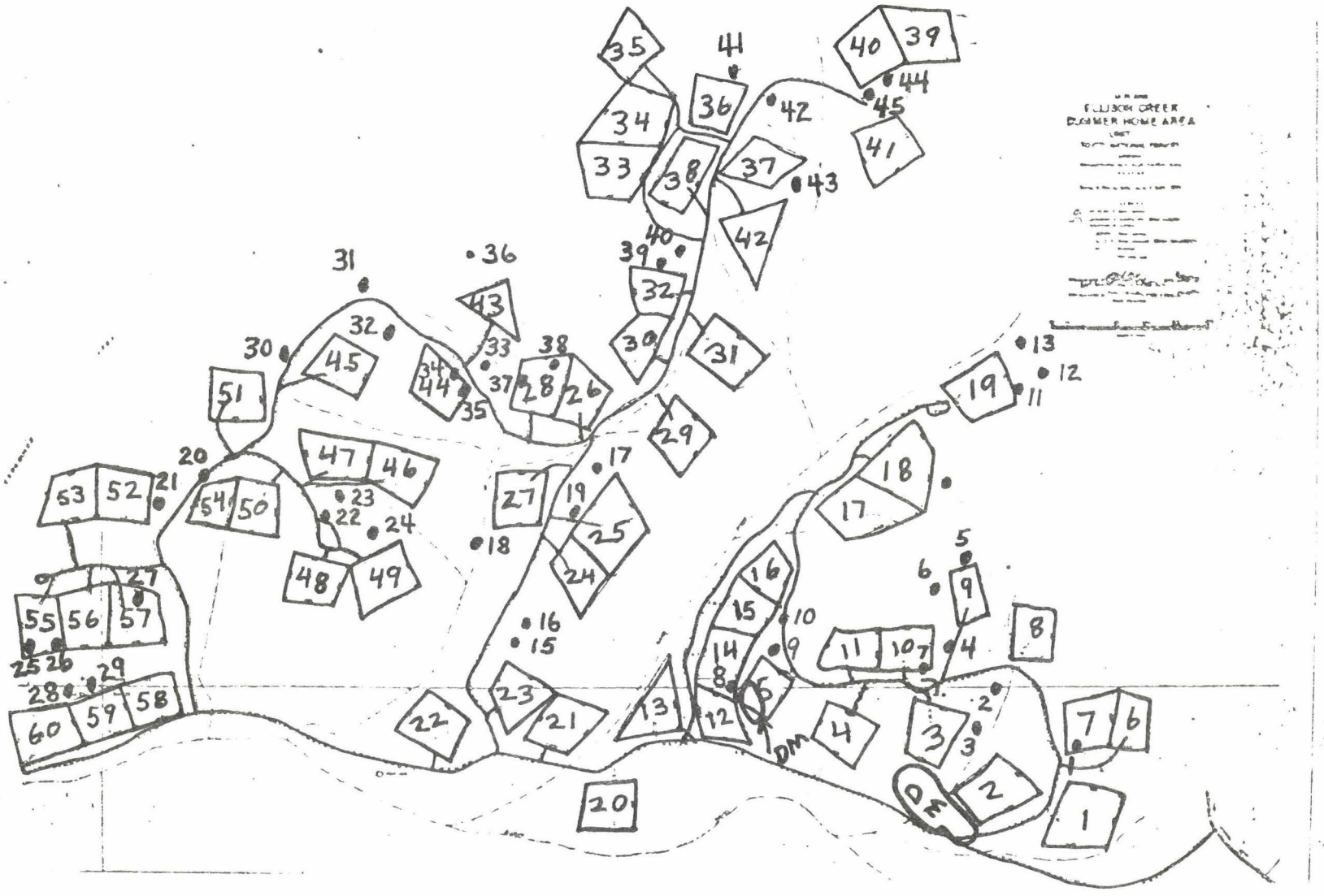


Figure 2

ELLISON CREEK

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
1	7	100' S. cabin	PP	24	X	X		L/M		Dead top, lightning scar
2	8-3	between 8 & 3	PP	32	X			H/H	X	Guy wire attached, supports powerline
3	3		PP	24	X			M/H		Lean, basal cavity, root and butt rot, weak crotch, dead top, powerline
4	9	by driveway	PP	27		X		H/M	X	
5	9	rear of house	PP	26	X		X	M/H		Root and butt rot, dead limbs, carpenter ants, wood borers
6	9-10	between 9 & 10	PP	30	X		X	H/M		Basal cavity, root and butt rot, dead limbs
7	10	by driveway, picnic area	PP	26		X	X	H/M	X	Lean, butt rot
8	5	1' from house	AJ	23	X			L/L		Lean, root heaving, dead limbs, mechanical injury
9	5		PP	26			X	L/H		Lean, dead limbs, guy wire to powerline attached

ELLISON CREEK

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
10	5	Main road near 5	Oak	19			X	H/M	X	Lean, butt rot, dead limbs
11	19	30' E. house	PP	27	X		X	M/H	X	Dead limbs
12	19		PP	23	X		X	H/M	X	Lean, dead limbs
13	19		PP	18	X		X	M/M		Lean, butt rot
14	18	90' E. house	PP	34	X		X	H/M	X	Dead limbs, tree 70' high
15	18		PP	21		X		H/M	X	Lean 10° toward road, butt rot
16	18		PP	25		X		L/L	X	Lean 15° away from road
17	18		PP	24	X			M/M	X	Dead limbs, telephone line attached
18	27	10' from house	PP	11	X			M/H	X	New dead
19	25	by driveway	PP	30	X	X		M/M		Lean, basal cavity, root and butt rot, heart rot
20	54		PP	24	X			H/M	X	Dead top, 10° lean, powerline
21	52		PP	21		X		M/L	X	Lean 15°, dead snag

ELLISON CREEK

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
22	48	near road	PP	14		X		L/L	X	Powerline
23	47	near road	PP	17		X		L/L	X	Powerline
24	49		PP	23		X		L/L	X	Powerline
25	55		PP	19	X		X	L/M		Basal cavity, new dead, 15° lean
26	55		PP	26			X	M/L	X	Old dead
27	57		PP	21	X		X	L/H		New dead, 15° lean towards house
28	59	30' N. cabin	PP	5			X	L/M	X	
29	59	30' N. cabin	PP	8			X	L/M	X	
30	59	NW of cabin	PP	30	X	X		L/M		Lean 5°, dead limbs, roots undercut by road bank, thin crown
31	59	by road	PP	24		X		H/L	X	
32	59	by road	PP	19		X		H/L	X	
33	59	by road	PP	29		X		L/M	X	
34	44	by road; in drive-way	PP	8	X			M/H	X	Lean
35	44	30' N. cabin	PP	16	X			M/M	X	Root heaving, lean toward powerline

ELLISON CREEK

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
36	43		PP	28		X	X	L/M	X	New dead, dead limbs
37	28	30' N. house	PP	35	X			L/H		Lean 10°, dead limbs
38	28	between 26 & 28	PP	30	X		X	M/H		Dead top, basal cavity, butt rot, heart rot
39	32		PP	24			X	L/L		Lean 20°, root heaving
40	32		PP	32			X	M/L	X	Butt rot, dead limbs
41	36		PP	20	X			M/H	X	Lean 15°
42	36	by road	PP	20		X		L/M	X	
43	37	southside 30' from house	PP	25	X			H/L	X	Lean 10°
44	40	on road	PP	21	X			M/L	X	Lean 15°, root rot
45	40		PP	31	X			L/M		Dead top, butt and root rot, lightning struck, powerline attached, lean 5°

Ellison Creek

Totals

Cut	Prune
25	14

Lot 2

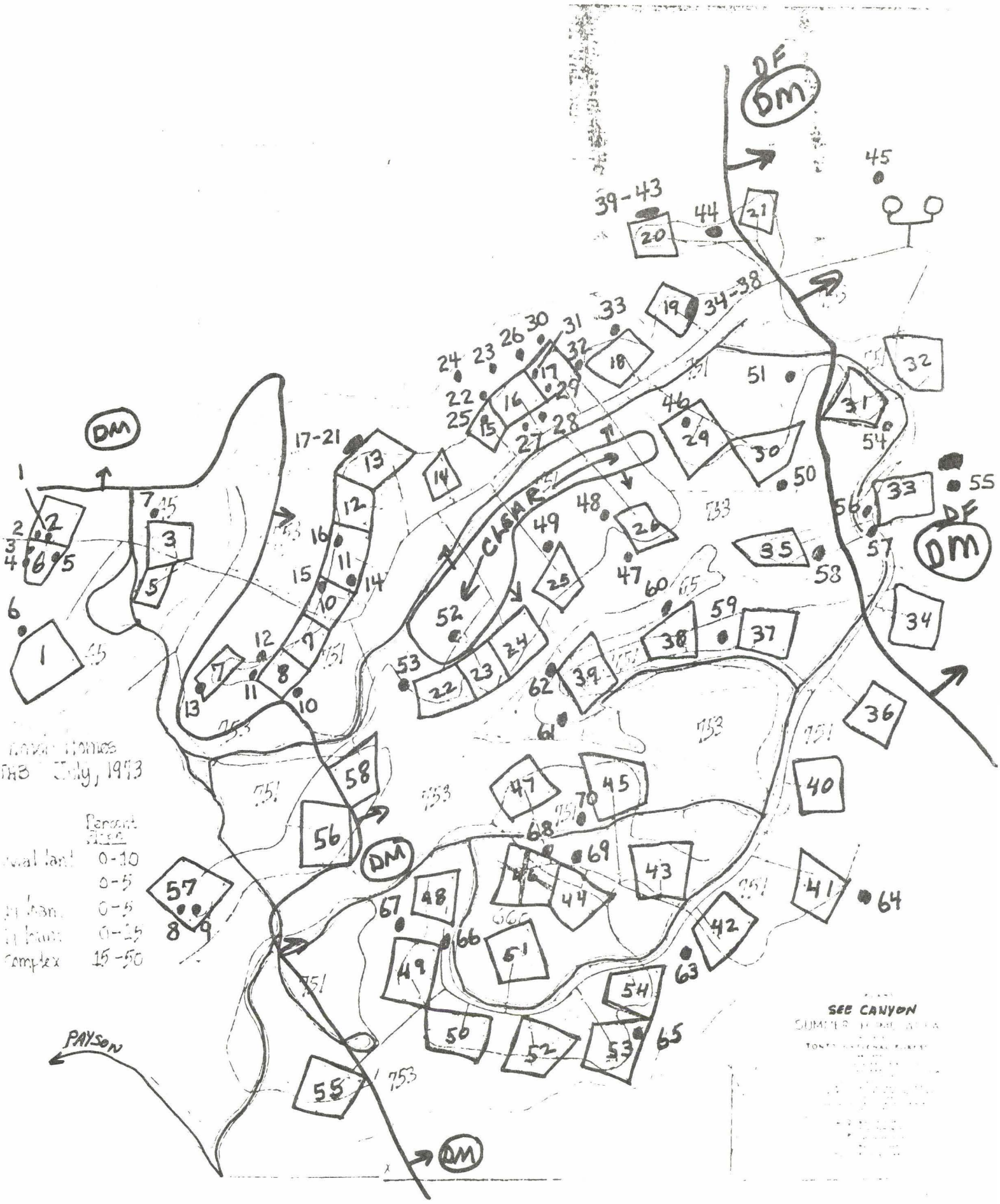
d.b.h.	DM Rating	Action
24	2	P (prune infected branches)
19	2	P
18	2	P
18	1	P
12	2	P
12	3	P
11	2	P
11	1	P
8	1	P
8	3	P
7	1	P
6	1	P
6	1	P
4	2	P
31	4	C (cut tree)
26	5	C
15	4	C
13	1	C
12	3	C
10	5	C
10	5	C
9	2	C
8	3	C
7	3	C
6	3	C
6	2	C
4	6	C
4	2	C
4	2	C
3	2	C
3	3	C
2	2	C
2	6	C
2	6	C
2	6	C
.5	2	C

Ellison Creek (continued)

Lot #5

d.b.h.	DM Rating	Action
8	2	C
8	2	C
5	1	C

Figure 3


DF
DM
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39-43
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CLEAR
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41
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42
63
48
67
66
49
51
54
50
52
53
65
55
PAYSON
SEE CANYON
Percent Slope
0-10
0-5
0-5
0-15
15-50

SEE CANYON

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
1	2	60' S. cabin	PP	8	X			M/M	X	Near outhouse
2	2	60' S. cabin	PP	7	X			M/M	X	Near outhouse
3	6		PP	6	X			L/M	X	Recent dead, near outhouse
4	6	N. of cabin	PP	5	X			L/M	X	
5	6	N. of cabin	PP	7	X			L/M	X	Recent dead
6	1		PP	12	X			M/H	X	
7	3	15' N. of cabin	PP	3	X			M/H	X	Recent dead
8	57	west of canyon	PP	8	X			L/L	X	Recent dead
9	57		PP	11	X			L/M	X	Recent dead
10	8	SE of cabin	PP	22	X			H/H		Lean, rotten branches
11	8	SW from cabin 60'	PP	25			X	H/M	X	Old dead, 10° lean
12	8	SW from cabin 60'	PP	24	X			H/M	X	Old dead, 10° lean
13	7	S. cabin 25' drive-way	PP	33	X			L/M		Compacted soil, thin crown, dead branches, 3 basal wounds
14	10	NE 30' from cabin	Oak	32			X	H/M		Lean, root and butt rot, dead branches
15	10	10' N. of cabin	PP	11	X			H/H	X	Weak crotch

SEE CANYON

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
16	11	50' NW of cabin	PP	13	X			M/M	X	Recent dead
17	13	45' W. of outhouse	PP	11	X			M/M	X	Cluster of 3 recent dead
18	13	45' W. of outhouse	PP	7	X			M/M	X	
19	13	45' W. of outhouse	PP	11	X			M/M	X	
20	13		PP	9	X	X	X	M/H	X	
21	13	W. of house; near driveway	PP		X	X	X	M/H	X	7 trees average d.b.h. 8 inches
22	16	5' W. house	PP	15	X	X		M/H	X	
23	16		PP	21	X			M/M	X	
24	16		PP	27			X	M/L	X	
25	16	20' S. house	PP	10	X	X		M/H	X	
26	16		PP	16	X			H/H	X	
27	16	E. of house 60'	PP	12	X	X		M/M	X	
28	16		PP	12		X		M/M	X	
29	17	100' S. of house	PP	11	X			H/H	X	Powerline
30	17	30' SW of cabin	PP	12	X			M/H	X	
31	17	E. of cabin	PP	5		X		M/M	X	

SEE CANYON

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
32	17	NE of cabin	PP	12		X		M/L	X	
33	18		PP	8			X	M/L	X	
34	19		PP	10		X		M/L	X	
35	19		PP	8		X		M/L	X	
36	19		PP	7		X		M/L	X	
37	19		PP	7		X		M/L	X	
38	19		PP	6		X		M/L		
39	20	NW of cabin, 50-60'	PP	16	X		X	M/M	X	
40	20	NW of cabin, 50-60'	PP	12	X		X	M/M	X	
41	20	NW of cabin, 50-60'	PP	22	X		X	M/M	X	
42	20	NW of cabin, 50-60'	PP	16	X		X	M/M	X	
43	20	10' W. side house	PP	9	X			H/H	X	
43	20		PP	6	X			M/H	X	
43	20	6' E. cabin	PP	4	X		X	M/M	X	
44	20 & 21	along road	PP	10	X			M/H	X	Powerline
44	20 & 21		PP	14	X			M/H	X	Powerline
44	20 & 21		PP	9	X			M/H	X	Powerline

SEE CANYON

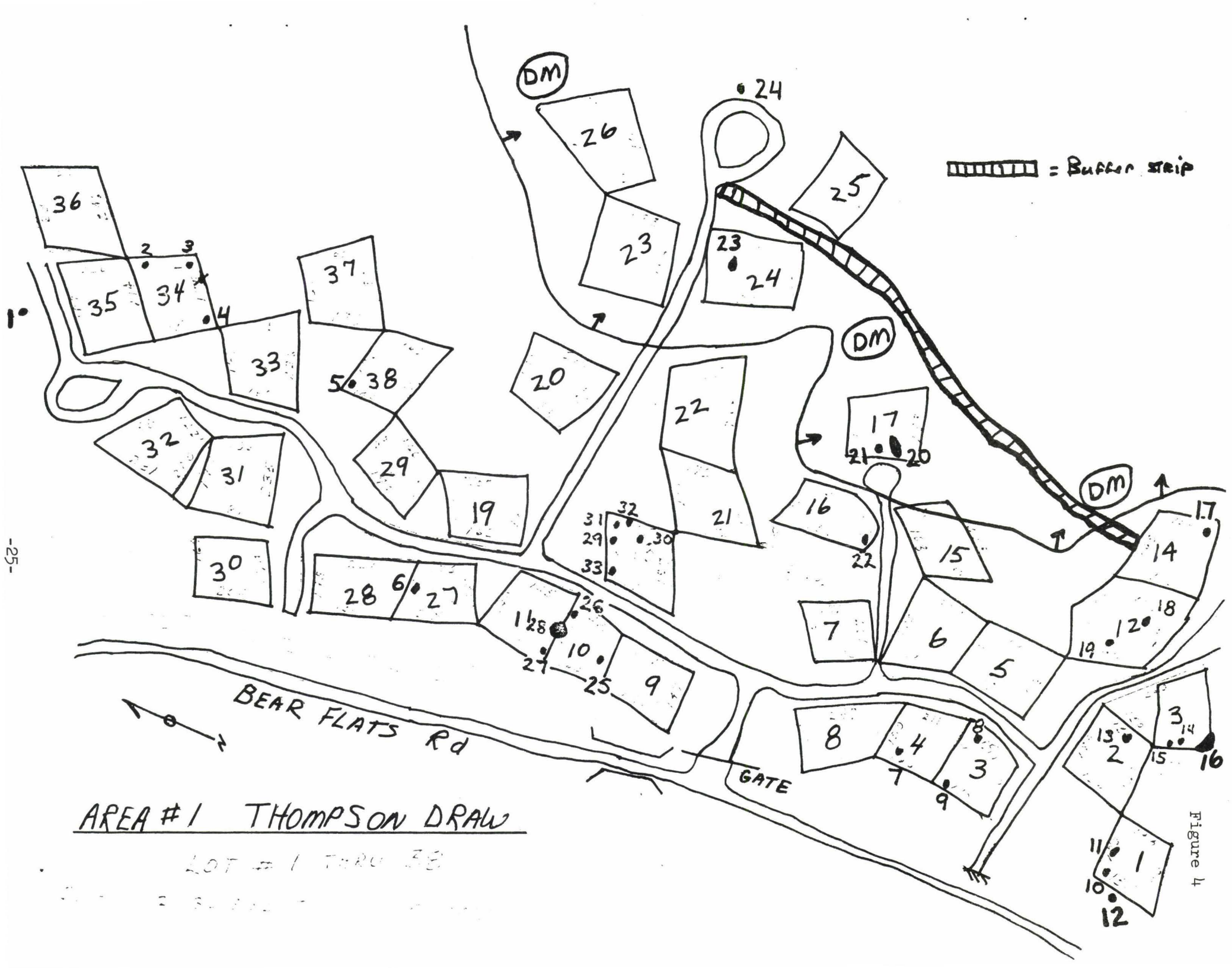
Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
45		NW of tanks	PP	17	X			M/H	X	Near water tanks
46	29		PP	14	X			L/M	X	Powerline
47	26	80' SW from cabin	PP	28	X			M/L	X	Lean 5°
48	25	W. of cabin	PP	22		X		M/L	X	Lean 5°
49	25	NW of cabin	PP	24		X		M/M	X	
50	30	20' SW house	PP	20	X			M/H	X	
51	30	east of driveway	PP	25		X		L/M		Broomed, lightning struck
52	23	100' NW cabin	PP	17		X	X	M/L	X	
53	22	W. from #22; 45' from driveway	PP	11	X			M/M	X	Powerline
54	31	50' E. cabin	PP	16	X			M/M	X	Powerline
55	33	NE of cabin	PP	16	X			L/L	X	Brooms
56	33	SW of cabin	PP	11	X			M/M	X	Powerline
57a	33	SW of cabin	PP	7	X			M/H	X	Powerline
57b	33	SW of cabin	PP	9	X			M/H	X	Powerline
57c	33	SW of cabin	PP	6	X			M/H	X	Powerline
57d	33	SW of cabin	PP	4	X			M/H	X	Powerline

SEE CANYON

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
58a	35		PP	7	X			M/H	X	Powerline
58b	35		PP	5	X			M/L	X	Powerline
59	37	20' SW of cabin	PP	21	X	X		H/H	X	
60	38	90' N. of cabin	PP	24	X	X		M/M	X	
61	39	SE cabin, 50' from road	PP	29		X		H/L	X	
62	39	W. of cabin, 60'	PP	16	X			M/M	X	
63	42	SW cabin, 20'	PP	21	X			H/H	X	
64	41	15' E. of outhouse	PP	24	X			M/L	X	
65	53		PP	6			X	M/L	X	
66	48	40' E. of RD, 90' S. of cabin	PP	23	X			H/L	X	Near main road
67	48	10' SW	PP	19	X			H/H	X	Old dead
68	47	40' S.	PP	21		X	X	H/L	X	
69		N. of 44, 200'	PP	8	X			H/L	X	Near road
70		W. of road, between 47 & 45	PP	10	X			M/L	X	Near road

See Canyon

Lot	d.b.h.	DM Rating	Prunable brooms
8	25	2	1
9-10	27	4	6
11	25	1	1
10	16	2	1
10	16	2	1
9-10	17	2	1
9-10	16	2	1
9-10	15	4	5
10	18	2	3
10	12	4	4
10	13	3	1
10	19	4	4
11	13	4	11
11	17	2	4
11	12	2	1
11-12	29	4	5
11-12	26	5	4
11-12	20 (double tree)	4	6
11-12	18	4	6
12	20	4	5
12	17	4	4
12	18	3	5
12	11	3	4
12	18	3	5
12	11	3	4
12	15	3	3
12	16	2	3
12	19	3	2
12	15	4	6
12	15	4	4
13	26	4	5
14	24	4	5
14	29	2	5
14	19	3	4
14	14	5	4
14	19	4	6
22	24	3	3
22	20	2	3
25-26	23	4	12
51	30	3	3
51	22	4	6
51	29	4	9
51	26	4	6
51	17	5	4
51	18	2	3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AREA #1 THOMPSON DRAW
LOT # 1 THRU 38

Figure 4

THOMPSON DRAW - BLOCK 1

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
1	35	W. of #35	PP	25		X		L/L		20° lean across road; undercut by stream; dead roots on stream side.
2	34	N. 70' from house	PP	5		X		M/L	X	
3	34	30' NE of house	PP	24	X	X		M/H		5° lean; fire scar; butt rot
4	34	SE of Lot 34	PP	17	X			H/L	X	snag
5	38	50' NE of house	PP	25	X	X		M/H	X	snag; 5° lean; telephone line attached
6	27	E. 10' of house	PP	5	X			H/H	X	5° lean over house
7	4	S. 30'	PP	7	X			H/M	X	10° lean
8	3	N. of house	Oak	12		X		M/L		butt rot; limb defect; dead top
9	3	150' west of house	PP	32	X	X		H/H	X	snag; 5° lean
10	1	S. 50'	PP	6			X	H/M	X	leaning
11	1	S. 50'	PP	6	X			H/L	X	leaning
12	1	75' SW of house	PP	8			X	H/L		leaning; root rot; butt rot
13	2	N. 50'	PP	5		X		H/M	X	leaning

THOMPSON DRAW - BLOCK 1

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
14	13	75' SE of house	Oak	12	X		X	M/M	X	leaning; swing attached to tree
15	13	75' SE of house	Oak	19	X			M/H	X	leaning
16a	13	SE house; 5 tree group	PP	18	X			M/M	X	
16b	13	" "	PP	11	X			M/M	X	
16c	13	" "	PP	11	X			M/M	X	
16d	13	" "	PP	14	X			M/M	X	
16e	13	" "	PP	14	X			M/M	X	
17	14	30' NE cabin	PP	7	X			H/L	X	
18	14	W. of house over driveway	Oak	7		X		L/L	X	
19	12	40' E. of house	PP	7		X		H/M	X	
20a	17		PP	6			X	H/M	X	
20b	17		PP	7			X	H/M	X	
21	17	40' SE of house	PP	17	X	X		M/M	X	5° lean
22	16	S. of 16	PP	30	X			L/M		powerline; dead top
23	24	40' N of house	PP	18	X		X	L/M	X	outhouse

THOMPSON DRAW - BLOCK 1

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
24	25	entrance to 25	PP	14		X		L/L	X	
25	9	between 9 & 10	PP	5	X			H/H	X	35° lean; telephone line
26	10	30' from outhouse N. of house	PP	7	X			H/M	X	outhouse
27	11	15' S. of house	PP	29	X	X		M/H		butt rot; basal cavity
28	10	DBH's 4 trees	PP	6, 7, 7, 12	X			M/M	X	butt rot; basal cavity
29	18	W. 30' from cabin	PP	6	X	X		M/M	X	
30	18	60' N. of cabin #29	PP	15	X			M/M		butt rot
31	18	Cluster of 3--5", 6", 8"--60' NW of house	PP	5, 6, 8	X			H/M	X	
32	18	40' NW of cabin	PP	5	X			H/M	X	powerline
33	18	70' SW cabin	PP	10	X			M/L	X	powerline

Thompson Draw, Block 1

Lot 16. Cut 5, prune 17; west of lot 16, broom prune 23 d.b.h., 5 brooms.

Lot 17. North of house cut 5; south prune 6, cut 8; west prune 4, cut 6, 21 d.b.h., 10 brooms.

Between lots 15 and 17. Prune 8, cut 10.

Between lots 16 and 17. Prune 5, cut 18.

Lot 25. South of house, broom prune; 4 pines.

D.b.h.	DM Rating	Prunable brooms
15	5	15
14	3	3
23	4	15+
17	5	10

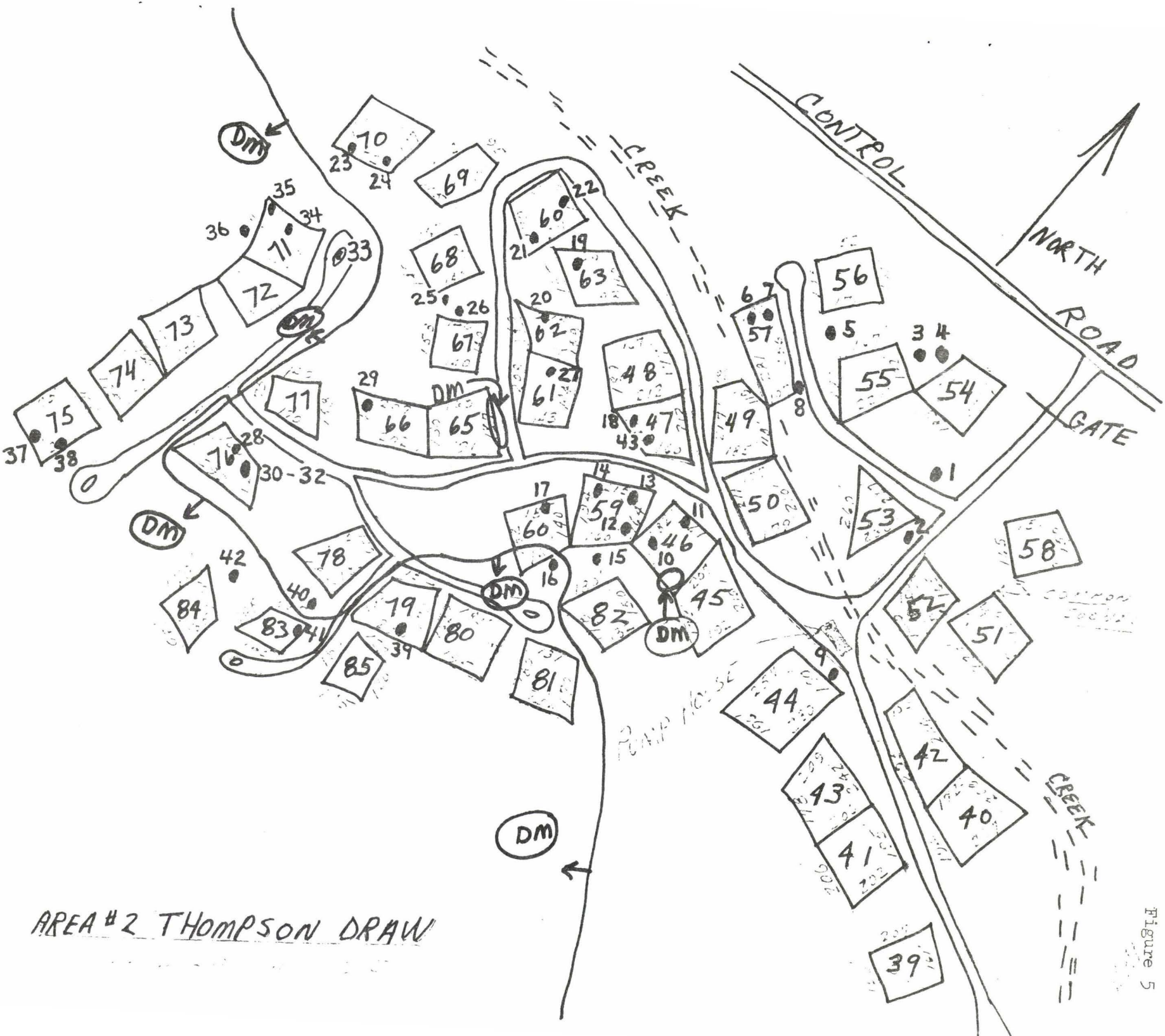
AREA #2 THOMPSON DRAW
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Figure 5

THOMPSON DRAW - BLOCK 2

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
1	53	100' N. cabin	PP	26				L/M	X	near road
2	53	110' NE cabin	PP	20				H/M	X	leaning 10°; butt rot; near road
3	54	120' W. cabin	PP	5			X	M/M	X	near volleyball court
4	54	120' W. cabin	PP	6			X	M/M	X	near volleyball court
5	55	60' SW cabin	PP	9				M/H	X	powerline
6	57	60' S. cabin	PP	7	X		X	M/M	X	
7	57	10' W. driveway	PP	5		X		M/M	X	
8		E. 100 yds.; lot 57, 20' S. of road	PP	17				M/M	X	powerline
9	44	20' E. driveway	PP	11				L/M		powerline; butt rot; heart rot
10	46	100' S. cabin	PP	14	X			M/L	X	outhouse
11	46	40' NW cabin	PP	7	X			M/M	X	powerline
12	59	45' NE cabin	PP	17	X			H/H	X	5° lean
13	59	25' NE cabin	PP	8	X			M/H	X	
14	59	W. cabin near road	PP	22	X			M/H	X	powerline
15	59	60' E. outhouse	PP	13	X			L/L	X	outhouse

THOMPSON DRAW - BLOCK 2

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
16	60	100' E. cabin	PP	6		X		L/L	X	
17	60	50' NW cabin	PP	9	X			M/H	X	powerline
18	47	100' SW cabin	PP	8			X	H/L	X	
19	63	70' S. cabin	PP	12	X		X	L/M	X	
20	62	20' N. cabin	PP	7	X			M/H	X	5° lean
21	64	50' S. cabin	PP	5	X			M/H	X	
22	64	70' N. cabin	PP	32	X			L/M		
23	70	40' W. cabin	PP	9	X			M/L	X	
24	70	50' E. cabin	PP	5	X			M/M	X	
25	68	50' E. cabin	PP	17	X			M/H	X	
26	67	70' W. cabin	PP	15	X			M/M	X	
27	61	65' NW cabin	PP	5	X			M/M	X	
28	76	70' NW cabin	PP	3	X			M/M	X	powerline
29	66	40' W. of garage	PP	5	X			M/L	X	
30	76	100' W. cabin	PP	6	X			M/M	X	powerline
31	76	100' W. cabin	PP	5	X			M/M	X	powerline

THOMPSON DRAW - BLOCK 2

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
32	76	100' W. cabin	PP	5	X			M/M	X	powerline
33	71	200' N. cabin	PP	11	X			M/H	X	powerline
34	71	30' N. cabin	PP	5		X	X	M/M	X	
35	71	10' S. cabin	PP	10	X			M/M	X	
36	71	30' S. cabin	PP	7			X	M/L	X	
37	75	20' W. from road	PP	14	X			M/H	X	powerline
38	75	25' W. from road	PP	9			X	M/L		5° lean
39	79	15' SE from cabin	PP	4	X		X	M/M	X	
40	83	100' S. from cabin	PP	5	X			M/H	X	powerline
41	83	80' S. from cabin	PP	4		X		M/L	X	
42	84	35' NE from cabin	PP	8		X	X	H/M	X	
43	47	20' SW cabin	Oak	19	X	X		M/M		butt rot; limb defect; dead top

Thompson Draw, Block 2

Between lots 70 and 71. Prune 59, cut 166.

Lot 65. Cut 5.

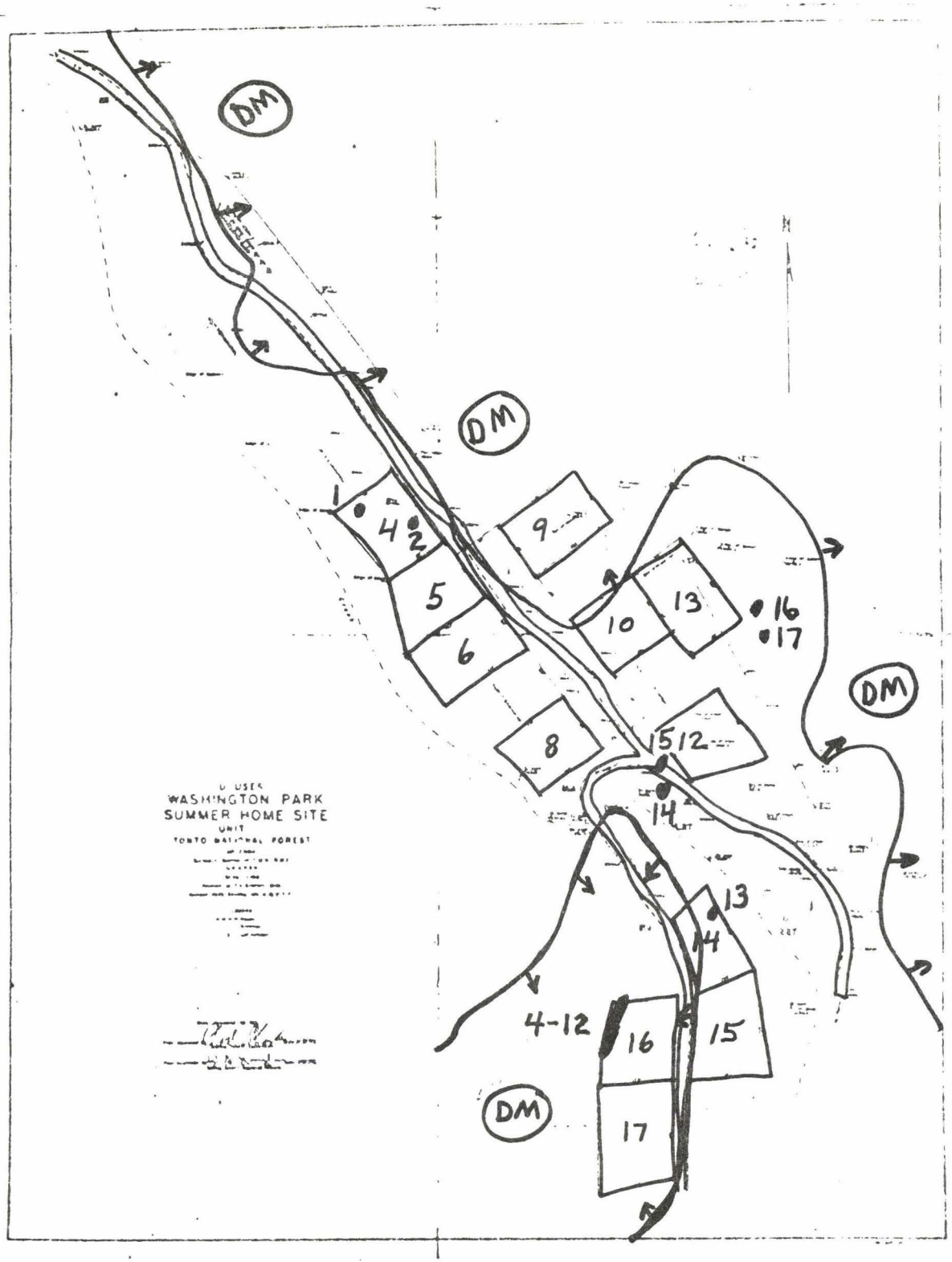
Lot 46. Prune 1.

From road by lot 76 to east of lot 83. Prune 8, cut 30.

Lot 78. Prune 1, cut 3.

Lot 60. Prune 4, cut 5.

Lot 80. Prune 10, cut 6.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WASHINGTON PARK
SUMMER HOME SITE
UNIT
TONTO NATIONAL FOREST

WASHINGTON PARK

Tree No.	Lot No.	Location	Species	DBH	Potential Target			Rating	Dead	Comments
					Structure	Vehicle	People			
1	4	15' NW cabin	PP	34	X			L/H		5° lean; weak branch crotch; limb defect; mechanical injury
2	4	15' E. cabin	PP	25			X	H/M	X	
3	16	50' NNW cabin	PP	13	X			H/H	X	
4	16	50' NNW cabin	PP	9			X	H/M	X	
5	16	50' NNW cabin	PP	8			X	H/M	X	
6	16	50' NNW cabin	PP	5			X	H/M	X	
7	16	50' NNW cabin	PP	14	X			M/H	X	
8	16	50' NNW cabin	PP	12	X			M/H	X	
9	16	50' NNW cabin	PP	6			X	H/M	X	
10	16	W. of cabin	PP	8			X	M/M	X	
11	16	W. of cabin	PP	9			X	M/M	X	
12	16	W. of cabin	PP	11			X	M/M	X	
13	14	20' N. cabin	Oak	23			X	M/L		heart rot; broken top
14	12	50' W. across road from cabin	Oak	21	X	X		H/M		leaning; root rot; heart rot; dead top

WASHINGTON PARK

Tree No.	Lot No.	Location	Species	DBH	Potential Target Structure	Vehicle	People	Rating	Dead	Comments
15	12	90' SE cabin	PP	27	X	X	X	M/M		butt rot; basal cavity; mechanical injury; lightning injury; heart rot
16	13	55' S. cabin	PP	22			X	M/L	X	
17	13	75' S. cabin	PP	34	X			M/L		overmature-thin crown; fire wound